

IMAGE PROCESSING

Subject Code : 10EC763

IA Marks : 25

No. of Lecture Hrs/Week : 04

Exam Hours : 03

Total no. of Lecture Hrs. : 52

Exam Marks : 100

UNIT - 1

DIGITAL IMAGE FUNDAMENTALS:

What is Digital Image Processing, fundamental Steps in Digital Image Processing, Components of an Image processing system, elements of Visual Perception. (6 Hrs)

UNIT - 2

Image Sensing and Acquisition, Image Sampling and Quantization, Some Basic Relationships between Pixels, Linear and Nonlinear Operations. (6 Hrs)

UNIT - 3

IMAGE TRANSFORMS: Two-dimensional orthogonal & unitary transforms, properties of unitary transforms, two dimensional discrete Fourier transform. (7 Hrs)

UNIT - 4

Discrete cosine transform, sine transform, Hadamard transform, Haar transform, Slant transform, KL transform. (7 Hrs)

UNIT - 5

IMAGE ENHANCEMENT: Image Enhancement in Spatial domain, Some Basic Gray Level Trans -formations, Histogram Processing, Enhancement Using Arithmetic/Logic Operations. (7 Hrs)

UNIT - 6

Basics of Spatial Filtering Image enhancement in the Frequency Domain filters, Smoothing Frequency Domain filters, Sharpening Frequency Domain filters, homomorphic filtering. (6 Hrs)

UNIT - 7

Model of image degradation/restoration process, noise models, Restoration in the Presence of Noise, Only-Spatial Filtering Periodic Noise Reduction by Frequency Domain Filtering, Linear Position-Invariant Degradations, inverse filtering, minimum mean square error (Weiner) Filtering, (7 Hrs)

UNIT - 8

Color Fundamentals. Color Models, Pseudo color Image Processing., processing basics of full color image processing (6 Hrs)

TEXT BOOK:

1. "Digital Image Processing", Rafael C.Gonzalez, Richard E.Woods, etl , TMH , 2nd Edition 2010.

REFERENCE BOOKS:

1. "Fundamentals of Digital Image Processing", Anil K. Jain,Pearson Education, 2001.
2. "Digital Image Processing and Analysis", B. Chanda and D.Dutta Majumdar, PHI, 2003.